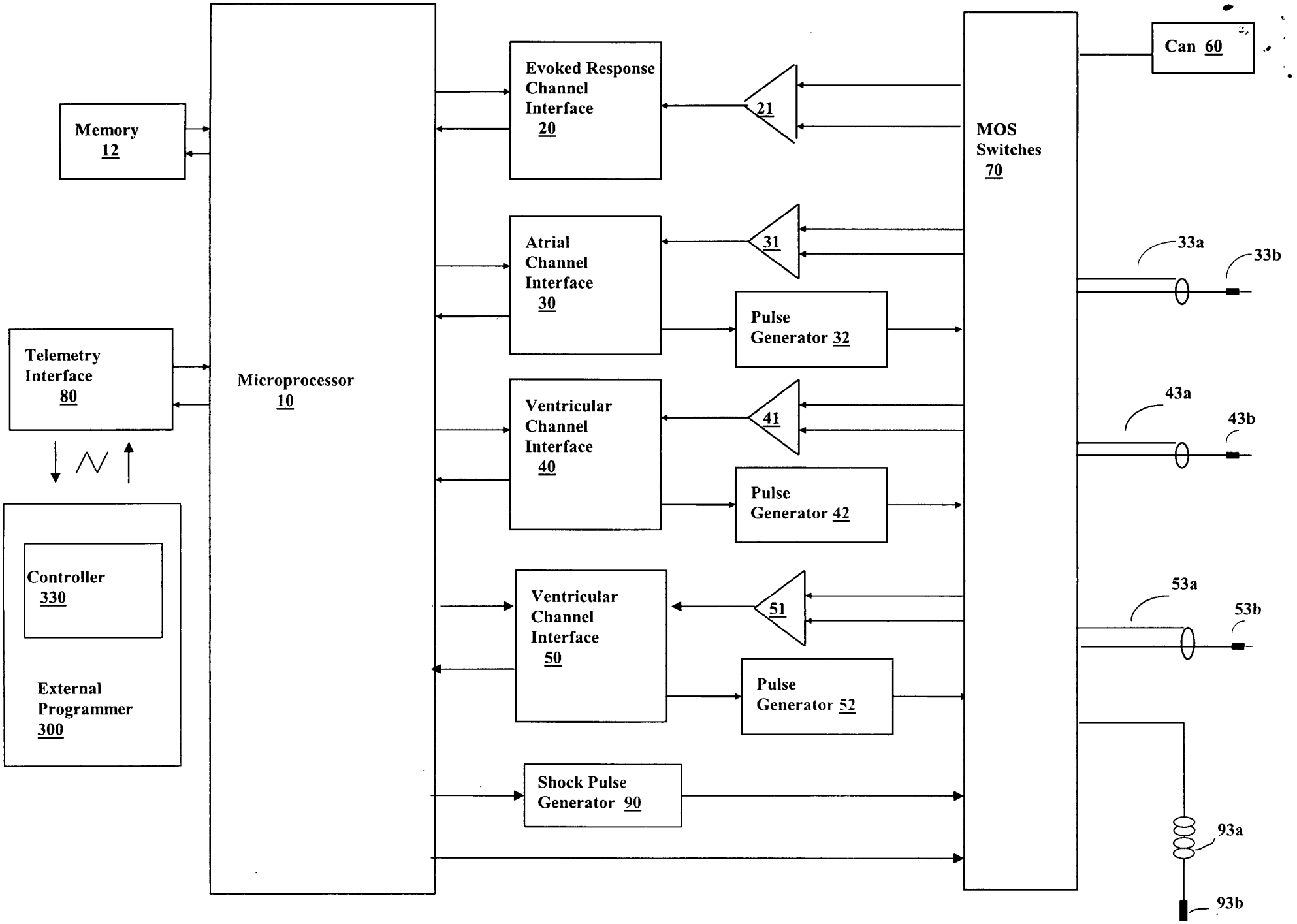

Memory
12
Microprocessor
10
Telemetry
Interface
80
Controller
330
External
Programmer
300
Evoked Response
Channel
Interface
20
21
Atrial
Channel
Interface
30
31
Pulse
Generator 32
Ventricular
Channel
Interface
40
41
Pulse
Generator 42
Ventricular
Channel
Interface
50
51
Pulse
Generator 52
Shock Pulse
Generator 90
MOS
Switches
70
Can 60
33a
33b
43a
43b
53a
53b
93a
93b

FIG. 1

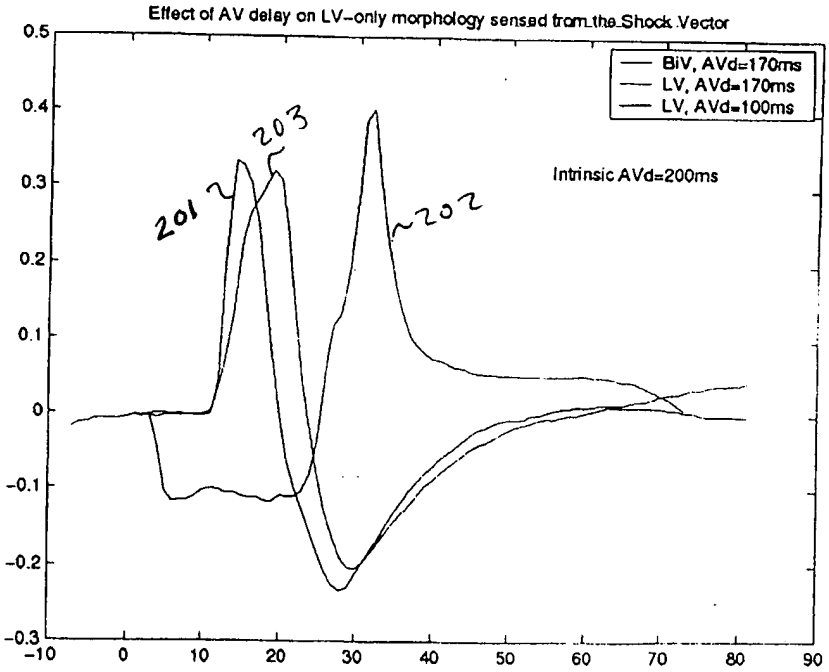

Effect of AV delay on LV-only morphology sensed from the Shock Vector
BiV, AVd=170ms
LV, AVd=170ms
LV, AVd=100ms
Intrinsic AVd=200ms
201
203
202
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
-10
0
10
20
30
40
50
60
70
80
90

Fig. 2

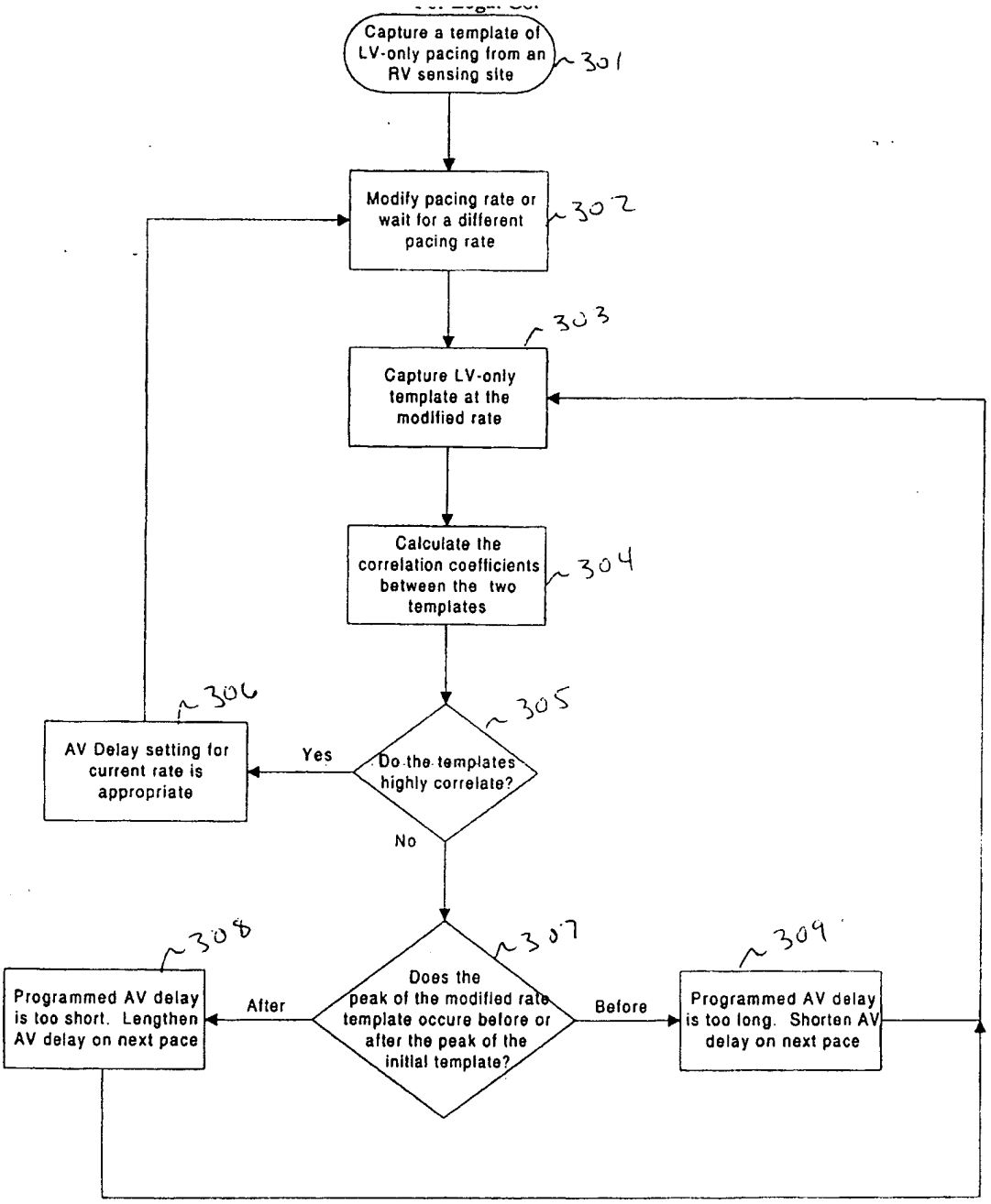
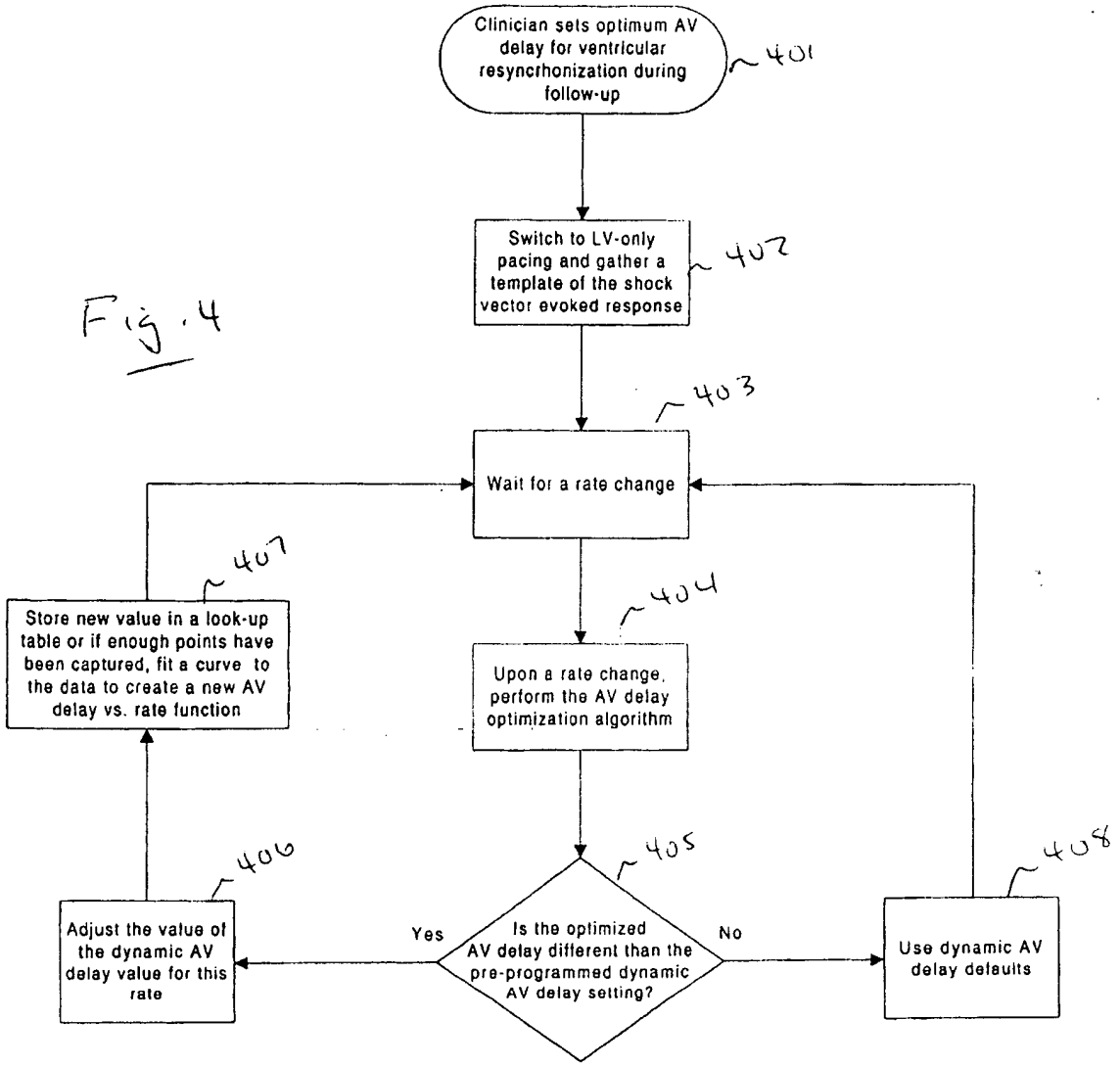

Capture a template of LV-only pacing from an RV sensing site
301
Modify pacing rate or wait for a different pacing rate
302
303
Capture LV-only template at the modified rate
Calculate the correlation coefficients between the two templates
304
305
Do the templates highly correlate?
Yes
306
AV Delay setting for current rate is appropriate
No
307
Does the peak of the modified rate template occure before or after the peak of the initial template?
After
308
Programmed AV delay is too short. Lengthen AV delay on next pace
Before
309
Programmed AV delay is too long. Shorten AV delay on next pace

Fig. 3

Fig. 4


Clinician sets optimum AV delay for ventricular resynchronization during follow-up
401
Switch to LV-only pacing and gather a template of the shock vector evoked response
402
403
Wait for a rate change
404
Upon a rate change, perform the AV delay optimization algorithm
405
Is the optimized AV delay different than the pre-programmed dynamic AV delay setting?
Yes
No
406
Adjust the value of the dynamic AV delay value for this rate
407
Store new value in a look-up table or if enough points have been captured, fit a curve to the data to create a new AV delay vs. rate function
408
Use dynamic AV delay defaults